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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 12/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/667,006

Applicant(s)

KWON ET AL.

Examiner

Thoi V Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 ~~is~~/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 ~~is~~/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claim 22 is objected to because of the following informalities: In lines 2 and 3 of the claim, "a black light unit disposed on the lower polarizer" should be --a back light unit disposed below the lower polarizer-- as shown in Fig. 2. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 3-7 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakashima et al. (USPN 6,141,123).

As shown in Figs 12A-12D, Nakashiwa discloses a method for fabricating a hologram diffuser which comprises:

providing a substrate 219;

forming a resin layer 210 on the substrate;

forming a hologram pattern in the resin layer; and

forming a smoothing layer 215 on the patterned resin layer,

wherein forming the hologram pattern includes:

locating an original hologram plate 213 at an upper portion of the resin layer;  
pressing to form a hologram pattern in the resin layer (col. 16, lines 45-50);

hardening the resin, wherein the resin layer is made from a thermal hardening resin, and further including the step of curing the resin layer by applying heat; and wherein the resin layer is made from an ultraviolet hardening resin, and further including the step of curing the resin layer by applying ultraviolet light (col. 18, lines 26-31); and removing the original hologram plate (col. 18, lines 19-25).

Nakashima also discloses that the resin layer is coated on the substrate (col. 15, lines 59-65) and has a thickness of 10 micrometers (col. 16, lines 24-26). As known in the art, spin coating, knife coating or extrusion coating may be used for forming the resin layer on the substrate.

Nakashima further discloses that the resin layer may be formed of polycarbonate (col. 4, lines 36-39) and the smoothing layer may be formed of polypropylene (col. 7, lines 19-21). As known in the art, the refractive index of polycarbonate is 1.586 and that of polypropylene is 1.48. Accordingly, the smoothing layer has a refractive index difference of greater than 0.1 compared to the refractive index of the resin layer.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. in view of Ohtaki et al. (USPN 6,432,498 B1).

Nakashima discloses a method for fabricating a hologram diffuser that is basically the same as that recited in claim 8 except for the thickness of 0.1 to 5 micrometers of the smoothing layer. As shown in Fig. 1, Morii discloses a method for fabricating a hologram diffuser wherein a smoothing layer 6 has a thickness of 2 micrometers to 200 micrometers. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method for fabricating a hologram diffuser with the teaching of Ohtaki by forming a smoothing layer having a proper thickness so as to prevent the hologram from deformation by external force.

6. Claims 2, 10-12, and 14-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Conventional Art (Fig. 1) in view of Shirochi (USPN 6,075,581) and Nakashima et al. (USPN 6,141,123).

As shown in Fig. 1, Applicant's Conventional Art discloses a liquid crystal display (LCD) comprising:

- a lower polarizer 12,
- a lower substrate 14 arranged at an upper portion of the lower polarizer,
- switching devices arranged in a matrix on the substrate (not shown);
- a liquid crystal layer 16 provided at an upper portion of the lower substrate;
- a color filter layer 18 formed on the liquid crystal layer;
- an upper substrate 20 arranged on the color filter;

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an upper polarizer 22 arranged above the upper substrate;  
a diffuser (not shown) arranged between the upper substrate and the upper polarizer; and  
a back light unit 12 disposed below the lower polarizer,  
wherein the liquid crystal display is a twisted nematic liquid crystal display; and  
wherein the upper polarizer and the lower polarizer are crossed perpendicular to each other (see Description of the Related Art).

Applicant's Conventional Art discloses a LCD that is basically the same as that recited in claims 2, 10-12, and 14-22 except that the diffuser is not a hologram diffuser arranged between the color filter layer and the upper substrate. As shown in Fig. 11, Shirochi discloses a LCD comprising a diffuser 51 having a grating surface 51a made of photosensitive resin arranged over an upper portion of a liquid crystal layer 21 and below an upper substrate 52, and an upper polarizer 25 arranged at the surface of the upper substrate. Further, as shown in Fig. 12C, Nakashima discloses a hologram layer 201 comprising a resin selected from a thermal hardening resin and an ultraviolet hardening resin (col. 8, lines 53-67), and a smoothing layer 215 provided at the upper portion of the hologram layer,

wherein the hologram layer has a thickness of 10 micrometers (col. 16, lines 24-26);

wherein a refractive index difference between the hologram layer and the smoothing layer is greater than 0.1 (see Paragraph 3) and hence the smoothing layer promotes the diffusion of light at the hologram layer; and

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wherein a shape of the hologram layer pattern controls a range of visual angle (col. 1, lines 6-11).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD of Applicant's Conventional Art with the teaching of Shirochi and Nakashima by employing a hologram layer and a smoothing layer arranged between the color filter and the upper substrate so as to obtain a wide range of visual angle for the display.

7. Claim 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Conventional Art (Fig. 1) in view of Shirochi (USPN 6,075,581) and Nakashima et al. (USPN 6,141,123) as applied to claims 2, 10-12, and 14-22 above and further in view of Ohtaki et al. (USPN 6,432,498 B1).

The LCD of Applicant's Conventional Art as modified in view of Shirochi and Nakashima includes all that is recited in claim 13 except for the thickness of 0.1 to 5 micrometers of the smoothing layer. As shown in Fig. 1, Morii discloses a method for fabricating a hologram diffuser wherein a smoothing layer 6 has a thickness of 2 micrometers to 200 micrometers. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method for fabricating a hologram diffuser with the teaching of Ohtaki by forming a smoothing layer having a proper thickness so as to prevent the hologram from deformation by external force.

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***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong



11/27/2002



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